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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/782,569 | 02/19/2004 | William H. Havens | 283-358 CON | 5660 |

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| EXAMINER | |
|---|---|
| KOYAMA, KUMIKO C | |
| **ART UNIT** | **PAPER NUMBER** |
| 2876 | |

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

CT

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/782,569 | HAVENS ET AL. | |
| | Examiner | Art Unit | |
| | Kumiko C. Koyama | 2876 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-47 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-47 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 021904,070904.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-47 are provisionally rejected under the judicially created doctrine of

obviousness-type double patenting as being unpatentable over claim 27 of copending

Application No. 10/453,796 in view of Smith et al (US 5,992,744).

Re claim 10 of the instant claimed invention: Claim 10 of the present invention recites,

"An optical reader comprising:
a housing defining at least one cavity;
a first imaging module mounted in said at least one cavity;
a second imaging module mounted in said at least one cavity;
wherein each of said first and second modules includes an image sensor, a support assembly, and at lest one illumination light emitting diode;
a control circuit in communication with each of said first and second imaging modules;
wherein said control circuit is programmed, in response to a trigger signal, to:
(a) capture a first frame of image data via a actuation of said at least one illumination light emitting diode thereby providing flood illumination and said image sensor of said first imaging module;
(b) determine whether said first frame of image data includes decodable indicia
(c) automatically subject to a decode attempt a second frame of image data if said determination step (b) indicates that decodable indicia is not or is likely

not represented in said first frame of image data, wherein said second frame of image data is captured via actuation of said at least one light emitting diode of said second imaging module thereby providing flood illumination and said image sensor of said first imaging module, wherein no illumination light emitting diode of said first imaging module is actuated when said second frame of image data is captured."

In 10/453,796 Application, the Applicant claims (claim 27),

"An optical reader comprising:
a portable housing;
a first imaging module having a first imaging axis;
a second imaging module having a second imaging axis, wherein said first and second imaging modules are disposed so that said first and second imaging axes converge toward one another;
wherein each of said first and second modules includes an image sensor having an array of photosensitive elements, a support assembly, and at least one illumination LED;
a control circuit in communication with each of said first and second imaging modules;
wherein said first and second imaging modules are encapsulated in said portable gun style housing, and
wherein said control circuit is programmed, in response to receipt of a trigger signal to:
(a) capture a first frame of image data via actuation of said illumination LED and said image sensor of said first imaging module;
(b) determine whether said first frame of image data includes decodable indicia;
(c) automatically subject to a decode attempt a second frame of image data if said determination step (b) indicates that decodable indicia is not or is likely not represented in said first frame, wherein said second frame of image data is captured via actuation of said at least one LED of said second imaging module and said image sensor of said first imaging module, wherein no illumination LED of said first imaging module is actuated when said second frame of image data is captured."

The 10/453,796 Application does not specifically teach a cavity.

In Patent No. 5,992,744, shows in Fig. 2, a housing H of a bar code reader and the components of the reader is located inside the housing and therefore, teaches a housing with a cavity for the components to be deposited.

Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to modify the teachings of Smith to the claims of 10/453,796 Application in order to protect the reader components within a housing in order to avoid any damage to the components, which further avoids any reading errors or mistakes.

This is a provisional obviousness-type double patenting rejection.

### *Claim Rejections - 35 USC § 102*

3. The The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 40-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al (US 5,992,744, as cited by the Applicant).

Smith teaches an optical reader having two scanning assemblies 20 and 40, which are imaging modules (Fig. 2). The scanning assembly 20 for 2D bar code reading (col 4, lines 38-40) includes an image sensor 24A, which is a CCD array (col 7, lines 9-17), a support assembly represented by 20 in Fig. 2 and a LED illumination (col 6, lines 58+). The scanning assembly 40 for 1D barcode reading (col 4, lines 45-50) includes a photosensitive detector/image sensor 47, a support assembly represented by 40 in Fig. 2, and an illumination subassembly including a laser beam (col 7, lines 39-57). Smith teaches activating at least one illumination source, thereby illuminating a target optical indicia as shown in step 606 of Fig. 6. Block 608 of Fig. 6 shows that the reader takes and stores a 2D image of the target, which teaches that the image sensor is

activated and captures an image data (col 10, lines 38-40). Smith teaches that the latter block causes the decoding assembly of reader to attempt to decode the stored image data, which teaches processing the frame of image data. As shown in Fig. 6, the decoding is not successful, 1D illumination is turned on, takes and stores the image, and executes a 1D decode routine. When the decoding is successful in either of the stage, the data is output as shown in the flow chart. Smith further discloses a serial/sequential variant of dual scan mode of operation of reader 10. The 2D scanning assembly 20, which has the LED illumination, is activated before 1D scanning assembly 40 (and if desired, this order can be reversed). Scanning assembly 40 is activated if and only if no successful decode results from the activation of scanning assembly 20 (col 10, lines 17-27 and lines 27+). The determination whether the first image is decodable or not is determined at the autodiscrimination program and then at a decision block 614 (col 10, lines 40+). Smith also teaches a parallel, or simultaneous, method where both decoding algorithms are executed at the same time (col 2, lines 44-50). Smith also teaches flood illumination (col 1, lines 35-38).

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3, 6, 7, 19-21, 25-28, 30-32, 34 and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al (US 5,992,744, as cited by the Applicant) in view of Feng (US 6,179,208, as cited by the Applicant).

Re claim 1, 3, 6, 19, 21, 25-27, 30-32, 34, 36, 38 and 39: Fig. 2 of Smith shows a housing H and shows that scanning components are placed within the housing, which teaches that there is a cavity within the housing. Smith teaches an optical reader having two scanning assemblies 20 and 40, which are imaging modules (Fig. 2). The scanning assembly 20 for 2D bar code reading (col 4, lines 38-40) includes an image sensor 24A, which is a CCD array (col 7, lines 9-17), a support assembly represented by 20 in Fig. 2 and a LED illumination (col 6, lines 58+). The scanning assembly 40 for 1D barcode reading (col 4, lines 45-50) includes a photosensitive detector/image sensor 47, a support assembly represented by 40 in Fig. 2, and an illumination subassembly including a laser beam (col 7, lines 39-57). Fig. 1 shows that the optical axis of the scanning assembly 20 is axis 46B, which is a first optical axis, and the optical axis of the scanning assembly 40 is axis 26, which is a second optical axis. Smith also discloses and teaches a read optics subassembly 24B, which is adapted to focus on image sensor 24A an image of that portion of illuminated area 1A-1, which is within the field of view of the read optics subassembly 24B (col 7, lines 10-17). The reader also includes an ASIC 60 including a programmable logic array, which includes all of the ASIC circuitry necessary to select, control and read data from scanning assemblies 20 and 40 (col 5, lines 54+). Fig. 2 shows a hand held housing encapsulating the two scanning assemblies. Smith teaches that the scanning and decoding steps described are implemented in conjunction with a manually actuated trigger (col 12, lines 55+). Smith further discloses a serial/sequential variant of dual scan mode of operation

of reader 10. The 2D scanning assembly 20, which has the LED illumination, is activated before 1D scanning assembly 40 (and if desired, this order can be reversed). Scanning assembly 40 is activated if and only if no successful decode results from the activation of scanning assembly 20 (col 10, lines 17-27 and lines 27+). The determination whether the first image is decodable or not is determined at the autodiscrimination program and then at a decision block 614 (col 10, lines 40+). Smith also teaches a parallel, or simultaneous, method where both decoding algorithms are executed at the same time (col 2, lines 44-50). Smith also teaches flood illumination (col 1, lines 35-38).

Smith does not specifically teach a LED illumination for the second scanning assembly. Smith also fairly teaches a frame of image.

Feng teaches the use of LED for illumination (col 9, lines 62-63). Feng teaches a portable data collection device that if the first captured image frame is not decodable, a second strobing cycle would be permitted to occur to generate a second captured image frame. The processing and decoding process would be attempted on the second image frame. If decoding were successful, the imaging assembly 102 would be turned off. If decoding were not successful, a third image would be captured and the processing and decoding process attempted (col 23, lines 10+). Feng also teaches that At the minimum value best focus position, the first and second illumination patterns combine to generate a full frame and single crosshair illumination pattern (col 5, lines 35-37).

Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the teachings of Feng to the teachings of the optical reader of Smith to replace the illumination to an LED source because the cost of LEDs are relatively

cheaper comparing to other illumination sources, such as laser, and therefore, such modification lowers the cost of the reader. Additional, it would have been obvious to integrate the teachings of Feng to the teachings of Smith in order to provide an enhanced image by providing multiple frame images and provide an accurate reading of the image for proper retrieval of information.

Re claim 2 and 20: Smith fails to teach that the control circuit in determining whether decodable indicia is represented in the first frame of image data attempts decode decodable indicia represented in the first frame of image data.

Feng teaches that a suitable image frame is processed and an attempt is made to decode the image of the dataform 10 represented within the captured image frame (col 15 lines 60+).

Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the teachings of Feng to the teachings of Smith in order to determine whether or not there exist a decodable indicia so that the reader can retrieve the correct data from the indicia, so that correct information can be obtained.

Re claim 7 and 28: Although Smith teaches two separate scanning assemblies located at a difference distance from each other (Fig. 1), Smith does not specifically teach a first and second best focus distance that are at least one inch apart.

However, Feng teaches an optical reader including an optical assembly 43 to have a best focus distance at approximately 5.5 inches and a best focus distance at approximate 36 inches (col 9, lines 3-17). The best focus distances are at least one inch apart.

Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the best focus distance and frame teachings of Feng to the teachings of the optical reader of Smith because the two scanning assemblies are located

separately within the housing of the reader and also having different scanning characteristics, and therefore by providing individual best focus distances, the reader has a clear view of the target, which further results in faster decoding process due clarity of the barcode image.

Re claim 37: Smith teaches an optical reader having two scanning assemblies 20 and 40, which are imaging modules (Fig. 2). The scanning assembly 20 for 2D bar code reading (col 4, lines 38-40) includes an image sensor 24A, which is a CCD array (col 7, lines 9-17), a support assembly represented by 20 in Fig. 2 and a LED illumination (col 6, lines 58+). The scanning assembly 40 for 1D barcode reading (col 4, lines 45-50) includes a photosensitive detector/image sensor 47, a support assembly represented by 40 in Fig. 2, and an illumination subassembly including a laser beam (col 7, lines 39-57). Smith teaches activating at least one illumination source, thereby illuminating a target optical indicia as shown in step 606 of Fig. 6. Block 608 of Fig. 6 shows that the reader takes and stores a 2D image of the target, which teaches that the image sensor is activated and captures an image data (col 10, lines 38-40). Smith teaches that the latter block causes the decoding assembly of reader to attempt to decode the stored image data, which teaches processing the frame of image data. As shown in Fig. 6, the decoding is not successful, 1D illumination is turned on, takes and stores the image, and executes a 1D decode routine. When the decoding is successful in either of the stage, the data is output as shown in the flow chart.

7. Claims 4, 5, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Feng as applied to claims 1, 19 and 31 above, and further in view of Hussey et al (US US 5,773,810, as cited by the Applicant). The teachings of Smith as modified by Feng have been discussed above.

Smith as modified by Feng fail to teach that the control circuit in determining whether decodable indicia is represented in the first frame of image data preliminarily evaluates image data of the first frame without attempting to decode decodable indicia represented therein. Smith as modified by Feng also fail to teach that the control circuit in preliminarily evaluating the image data evaluates the image data to determine whether a saturation condition is present.

Hussey teaches that two image acceptability tests are performed and must be passed before decoding is initiated. The tests include a whiteness level test and a focus degree test. For the whiteness level test, the absolute magnitude of the difference between the whiteness level WL and whiteness threshold WT is less than a whiteness acceptability threshold WA. For the focus degree tests, the focus metric value FM has a value greater than a focus acceptability threshold value, FMIN, which corresponds to the minimum acceptable value thereof (col 11 lines 27-54).

Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the teachings of Hussey to the teachings of Smith as modified by Feng to make sure that the indicia image captured is in a acceptable condition for decoding, which avoids wasting time in case where the image is corrupted because it is easier to stop the reader before decoding rather than stopping a process during decoding due to the amount of hardware and program instructions used.

8. Claim 8, 24 and 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Feng as applied to claim 1, 19 and 31 above, and further in view of Plesko (US 5,880,452, as cited by the Applicant). The teachings of Smith as modified by Feng have been discussed above.

Smith as modified by Feng fail to teach that the trigger signal is an automatically generated trigger signal generated by decodable indicia being moved in a field of view of the reader.

Plesko teaches a Miniature Ultrasonic transmitter/receiver combination may be used to sense relative motion and these are employed in the same manner as the photo detectors for relative motion or proximity detectors except that sonic waves interacting with a target are detected and used to automatically trigger scan sequences (col 11 lines 14-21).

Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the teachings of Plesko to the teachings of Smith as modified by Feng in order to capture the image of the indicia when it is at a focused position and clear in view so that an accurate indicia information can be achieved and decoded accurately.

9. Claims 33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Feng as applied to claim 31 above, and further in view of Roxby (US 5,585,616, as cited by the Applicant). The teachings of Smith as modified by Feng have been discussed above.

Smith as modified by Feng fail to teach a CMOS image sensor.

Roxby teaches a solid state image sensor being a CMOS sensor (col 1, lines 54-55).

Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to modify the teachings of Roxby to the teachings of Smith as modified by Feng in order to overcome the disadvantages of the CCD, such as blooming, and at the same time maintains a reduced cost in the manufacturing process.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kumiko C. Koyama whose telephone number is 571-272-2394. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee can be reached on 571-272-2398. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kumiko C. Koyama
Kumiko C. Koyama
February 19, 2005

DIANE I. LEE
PRIMARY EXAMINER